CHAPTER 12

REAR BATTLE

12-1. Introduction

a. To provide continuous effective communication at EAC, the Tropo Company must be able to survive in a hostile environment. A major aspect of Threat doctrine is to disrupt rear area operations. When CPs and communications sites are located, Threat forces will try to neutralize them. Detection must be avoided to survive. Also, it may be necessary to defend terminal sites. Successful self-defense requires planning, preparing, rehearsing, and vigorous execution.

b. The Tropo Company commander must prepare personnel for defense. Plans are based on coordination with supported units. This chapter will highlight the various type threats to the Company. It will then emphasize defensive considerations. Because the subject is too broad and technical to cover completely, reference will be made to appropriate manuals to consult for details. Also, soldier's manuals for the senior skill levels within the Tropo Company list many of the tasks to be performed for specific security and defense situations.

12-2. Rear battle threat

a. The rear area is the space within a command where the majority of the combat support and combat service support functions are performed. In a fully developed theater of operations, the whole COMMZ is classed as rear area. Threat forces have the capability to initiate and support combat operations deep in the COMMZ. Their objective is to destroy critical elements, cause disruption, and degrade capabilities. The Tropo Company is usually employed in the COMMZ but may also be employed in the rear of the combat zone.

b. The threat to rear battle operations may be of low, medium, or high intensity. These three levels of threat are summarized in table 12-1. Commanders develop alert systems and response actions according to the level of threat that must be countered. Elements of the Tropo Company may face any combination of Threat forces at the same time. Other disruptive occurrences include conventional and NBC shelling and bombing and natural disasters. A detailed description of the rear battle threat can be found in FM 100-2-1.

TABLE 12-1
REAR BATTLE THREAT LEVELS AND RESPONSES

Threat Level	Threat	Response Forces
Level I	Agents, saboteurs, terrorists	Base defense
Level II	Diversionary operations and sabotage by unconventional and reconnoiter forces, raids by tactical units, special or unconventional warfare missions	Military police (Base defense)
Level III	Airborne, heliborne, amphibious, and ground forces deliberate operations, infiltration operations	Tactical combat forces (Military police) (Base defense)

12-3. Unit security and defense

a. Rear battle objectives. Company security and defense is accomplished within guidelines established by U.S. Army rear battle doctrine. The rear battle is designed to make collective use of units in the rear to prevent or minimize interruption of operations. It includes measures taken to protect the resources of rear area commands against sabotage, Threat forces activity, and natural disasters. Rear battle objectives include the following:

(1) Securing the rear area and facilities.

(2) Preventing or minimizing Threat interference with command, control, and communications.

(3) Preventing or minimizing disruption of combat support and combat service support forward.

(4) Providing unimpeded movement of friendly units throughout the rear area.

(5) Finding, fixing, and destroying Threat intrusions in the rear area.

(6) Providing area damage control (ADC).

b. Rear battle command and control. The TA commander is responsible for rear battle planning and execution at EAC. Rear battle operations are conducted through decentralized command and control systems utilized by EAC rear area operations centers (RAOCs). RAOCs are usually established at TA, TAACOM, and TAACOM Area Support Group (ASG) levels. Each echelon commander will appoint a rear battle officer to conduct rear battle operations. Where HNS agreements have been reached, certain rear battle responsibilities may be assumed by the host nation. Within a TAACOM, Tropo Company elements would be assigned to particular bases for defense purposes. The base commander provides the command and control headquarters for base defense. The base defense operations center (BDOC) is staffed and equipped by

the host and tenant units. Sometimes, base clusters are formed for mutual defense and controlled through abase cluster operations center (BCOC). The Tropo Company plans for the defense of its sites as part of base defense. Troposcatter section chiefs submit plans to the BDOC for approval. Defense plans should also include ADC considerations. See FM 90-14 for complete details on rear battle commandant control.

c. Conduct of the rear battle. Responses to Threat attacks in the rear area must be rapid and strong enough to defeat them. They must minimize disruption of friendly operations. Table 12-1 also shows rear battle responses to the various threat levels. Obviously, base defense is the cornerstone to effective conduct of the rear battle.

(1) Unit defense planning. Detailed planning is done by the dispersed troposcatter sections and teams per unit SOPs. Frequently, Tropo Company assets will be deployed to remote locations. Site defense planning should be as complete as possible but flexible. One cannot plan for every situation. Defense or security requirements beyond organic capability should be identified. When unable to defeat attacking forces, site defense forces attempt to defend the site/base until other forces can respond. Defense procedures should be simple and easy to implement. Individual responsibilities should be clearly defined. One basic plan with alternative courses of action against various threats is probably best.

(2) *Defense against air and ground attack.* Troposcatter terminal sections have a distinctive field signature. They must rely heavily on sound OPSEC. This includes taking all counter reconnaissance/surveillance actions; for example, camouflage, watching thermal signature, controlling electronic emissions, and so forth. Facilities should be camouflaged, concealed, covered, and dispersed as much as possible. See FM 5-20. Warnings against air attack are broadcast over the air warning net, which should be constantly monitored. Army counterintelligence (CI) also can provide early warning and recommend OPSEC procedures to counter Threat intrusions into the rear area. See FM 34-60. Defense against ground attack should be based on a sound site defense plan. Some actions to be taken in most defensive situations are listed below:

(a) Assign sectors of defense.

(b) Locate a focal point for command and control.

(c) Ensure individuals are familiar with their responsibilities.

(d) Prepare positions (FM 5-15).

(e) Place weapons to cover avenues of approach.

(f) Use artificial obstacles and mines as required.

(g) Coordinate with adjacent units.

(h) Hold frequent rehearsals and inspections.

(i) Practice camouflage, light, and noise discipline.

(j) Design a warning system.

(k) Establish procedures for requesting artillery and air support.

(1) Designate assembly points for reserve forces and firefighting crews.

(m) Plan for the evacuation of casualties.

(n) Plan for the destruction of equipment and supplies. Personnel are trained in their individual weapons and in defensive measures, but have a limited capability to defend themselves. The Company commander should schedule refresher training and conduct defense exercises.

d. Area damage control. The Tropo Company must plan and train for ADC operations. ADC limits damage, seals off affected areas, salvages equipment, saves lives, and restores operations. ADC activities must be included in SOPs and rehearsed to ensure individuals are certain of their responsibilities. See FM 90-14. In most cases, the dispersed Tropo Company elements should incorporate their ADC measures with those of collocated units.

12-4. Emergency destruction of equipment

a. Emergency destruction (ED) is a command responsibility. Sensitive equipment and crypto material are involved in all troposcatter units. Due to the lack of mobility of troposcatter elements, ED is a distinct possibility. The Company SOP must include ED plans. Plans should be simple, be capable of rapid execution, and include priorities and methods for destruction. Specific people must be designated to perform the destruction. Common methods of destruction include smashing, cutting, burning, bending, breaking, burying, and scattering. If explosives are required, people must be trained to use them. See appropriate TMs for destruction procedures.

b. Proper Authorization for ED is Required. ED is usually ordered by higher commanders as a last resort. The SOP must be specific as to what constitutes a local decision to destroy equipment. When ED is accomplished, a report should be made to higher headquarters. For more detail, see AR 380-5 and FM 5-25.

12-5. Nuclear, biological, and chemical threat

A coordinated Threat attack of the COMMZ may well include NBC warfare. Few munitions can disrupt operations as extensively as NBC. The effects cover large areas and can produce massive casualties. Nuclear weapons are also capable of causing enormous destruction. Communications centers and nodes will likely be prime targets. This paragraph will acquaint Tropo Company personnel with the severity of the threat posed by NBC munitions. Consult FM 3-100 for more complete information on the effects of NBC warfare.

a. Nuclear weapons effects. Nuclear weapons ef-

fects are classified as initial or residual. Initial effects occur within 1 minute after detonation. Residual effects, such as fallout, occur after the first minute and are primarily of long-term interest. The principal initial casualty-producing effects are blast, thermal radiation, and initial nuclear radiation. Other initial effects, electromagnetic pulse (EMP) and transient radiation effects on electronics (TREE), affect only electrical and electronic equipment. Also, blackout is an atmospheric condition which can disrupt communications for hours. Aside from the obvious devastating effects of a nuclear explosion, C-E systems are extremely susceptible to EMP, and communications transmission may be impossible in the regions affected by blackout.

(1) *Blast.* Blast is the actual explosive force of the nuclear weapon detonation and accounts for much of the physical destruction. Casualties to exposed troops will result from flying debris, troops being blown around, and over pressures which may cause injuries such as ruptured eardrums.

(2) *Thermal radiation.* Immediate intense heat starts fires in buildings and forests. The heat can also burn exposed skin at distances where blast and nuclear radiation effects are minor. The extremely bright light formed can cause temporary or permanent blindness.

(3) *Nuclear radiation.* Initial nuclear radiation is emitted within the first minute after detonation. To survive initial radiation, personnel must be in a protected position before the detonation. Residual radiation lasts after the first minute. It consists of fallout or neutron-induced radiation near the point of detonation. Fallout is the primary residual hazard.

(4) *Electromagnetic pulse.* EMP is a short duration radio frequency pulse. EMP does not affect personnel. However, radio and troposcatter equipment can be damaged or made inoperative by EMP. Unless well buried (approximately 10 feet), cable and wire have varying degrees of vulnerability to EMP. This EMP energy may be higher than the circuit and component capabilities of the equipment. The damage can range from burned out fuses, transistors, and coils to the destruction of complete power supplies. Table 12-2 provides an indication of the vulnerability of tactical equipment to EMP. EMP will vary by type and yield of burst.

(5) *Nuclear blackout.* Nuclear blackout is the result of the fireball itself and the large dust clouds which may be created. It can last from a few seconds to many hours. It affects radio and troposcatter communications by–

(a) Refraction (bending of the waves).

(b) Absorption (consuming the waves).

(c) Scattering (scattering the waves in all directions).

b. Biological agent effects. Biological agents consist of disease-producing germs and toxins. These agents may be dispersed as aerosols by generators, low-explosive shells and bomblets, venting rockets, and aircraft sprayers. The aerosol form allows them to be spread rapidly by the wind and cover large areas. Harmful germs may also be spread by the release of infected insects and rodents. Germs and toxins can be used to cause injury, death, and disease among people, animals, and plants. They also can be used to cause deterioration of materiel and supplies. Antipersonnel biological agents have little effect on electronic components. However, C-E equipment may require decontamination in order to eliminate persistent contact hazards.

TABLE 12–2
EQUIPMENT VULNERABILITY TO EMP

Equipment Categories	Probability of Damage	Equipment Included in Category
I	Very low	Artillery, tactical equipment (excluding communications equipment)
II	Low	Fire direction control equipment, nuclear warheads, missiles
III	Medium	Long-range communications equipment (greater than 100 kilometers), air defense radars
IV	High	Target acquisition radars, short-range communications equipment (less than 100 kilometers), command and control equipment

c. Chemical agent effects.

(1) Chemical agents are a significant threat to Tropo Company personnel as well as equipment. They can be disseminated by aircraft, artillery, rockets, and missiles. The severity of the effect is dependent upon the dose received. Chemical agents fall into four classes:

(a) Nerve agents that directly affect the nervous system.

(b) Blister agents that affect the eyes and lungs and blister the skin.

(c) Blood agents that affect the circulatory and respiratory systems by preventing the body's cells from using oxygen.

(d) Choking agents that affect the respiratory system by attacking the lungs.

(2) Persistent chemical agents may contaminate supplies and equipment and restrict the use of terrain and facilities for hours and days.

12-6. Nuclear, biological, and chemical defense

The Tropo Company must be prepared to function under NBC conditions. FM 11-23 directs every TCC(A) unit to become proficient in the survival techniques

and operational standards for NBC warfare. NBC defense must be fully integrated into unit planning and training programs.

a. Defense tasks and planning.

(1) The Tropo Company must plan for three basic NBC defense tasks: contamination avoidance, protection of personnel and equipment, and decontamination when necessary. The successful performance of these tasks should be the objective of the Company NBC training program.

(a) Contamination avoidance. Contamination avoidance is accomplished through NBC awareness, detection and warning of NBC hazards, and limiting the spread of contamination. Contaminated areas should be bypassed if possible. If not, personnel must use protective clothing and equipment. FM 3-3 covers the marking of contaminated areas.

(b) Protection of personnel and equipment. Personnel must be protected to maintain the integrity of Tropo Company operations. During the threat of a chemical attack, the Company commander can balance personnel safety with unit effectiveness by using a mission-oriented protective posture (MOPP). The MOPP prescribes what equipment and clothing must be worn and/or used and what operational precautionary measures must be applied. Table 12-3 shows sample requirements for protective clothing/equipment for different MOPP levels. FM 3-100 must be consulted for the detail necessary to prepare MOPP levels appropriate to the Company. FM 3-3 provides added detail to prepare nuclear contamination avoidance levels. All MOPP information should be placed in the Company SOP. Also see FM 3-4 for NBC protection measures based on a particular situation.

(c) Decontamination. Decontamination reduces casualties and improves individual and unit effectiveness. Individuals must be trained to perform emergency self-decontamination. Units must have the capability to perform personnel decontamination and partial equipment decontamination. The source of decontamination devices and trained specialists should be determined. FM 3-5 provides a guide for NBC decontamination.

(2) The NBC plan can be part of the unit defense plan or an annex to it. Dispersed Tropo Company elements must be integrated into the supported unit NBC plan. For the details needed to plan and train for NBC defense, see FM 3-100. As indicated, unit SOPs for defense against NBC are a requirement.

(3) The Company's NBC program is directed by the chemical NCO. An NBC control party is formed to plan and conduct unit NBC defense activities. Other teams should be designated as required. Each element of the Company must be made aware of its responsibilities for NBC defense.

b. Decontamination of communications equipment. Decontamination of Tropo Company equipment must be done very carefully. Ensure the power supply is disconnected to prevent injury to personnel and damage to the equipment. FM 3-5 provides instructions for the decontamination of metal, plastic, leather, and wood parts. Care must be taken not to damage electronic components with decontamination solutions. Some decontaminants, by their nature, are reactive chemicals which can seriously corrode materials. For the electronic components themselves, the use of hot air, aeration, and weathering provide the best methods of decontamination for chemical and biological agents. Some decontamination takes place from heat given off by operating the equipment. For radioactivity, little can be done except to reduce radiation levels through aging. Complete decontamination is very difficult, time consuming, and often impossible to accomplish.

c. Electromagnetic pulse and blackout defense.

(1) Protective measures taken for EMP before a nuclear attack are critical to equipment survivability. Cables, wires, antenna systems, and all other metal structures are good electrical conductors. They absorb EMP energy. Material that couples with electromagnetic energy can absorb enough EMP energy to induce voltage and currents. The key to protection is to re-

TABLE 12-3
PROTECTIVE EQUIPMENT AND CLOTHING FOR MOPP LEVELS

MOPP	Overgarment	Overboots	Mask/Hood	Gloves
0	Carried	Carried	Carried	Carried
1	Worn, opened or closed based on temperature	Carried	Carried	Carried
2	Same as MOPP 1	Worn	Carried	Carried
3	Same as MOPP 1	Worn	Worn, hood opened or closed based on temperature	Carried
4	Worn, closed	Worn	Worn, hood closed	Worn

duce EMP coupling. The best protection is to have the troposcatter terminals shut down and disconnected prior to a nuclear attack. If not possible, a portion of the equipment may be able to be off the air. Do not forget to take precautions with organic command and control C-E equipment. Protective measures may include ferrous shielding, special voltage-limiting devices, and filtering systems built into the equipment. Also, new fiber optic cable systems are EMP resistant and may be used as replacements for current video and metallic cable systems. See Table 12-4 for a listing of some EMP protective measures.

(2) There are no protective measures against blackout since it does not affect personnel or equipment. It does, however, prohibit radio transmission through affected areas. This problem can be mitigated by planning for alternate routing to bypass affected regions or by the use of other communications means (such as messenger).

TABLE 12-4
EMP PROTECTIVE MEASURES

Measure	Rationale
Remove exterior conductors	EMP can couple with external metal conductors even if they are covered with insulation. Examples of potential EMP conductors include all types of radio antennas; any wire or cable connections, to include handset, external speaker and headset cables, power cables, computer interface connectors, rechargers, telephone lines, field wire, and extension cords; and other metal conductors, such as pipes and ducts. When use is not essential, such conductors should be disconnected or removed to prevent EMP-induced currents from being transmitted into the piece of equipment and damaging critical components or upsetting the equipment by blowing fuses, tripping circuit breakers, and garbling computer memories.
Use ultrahigh frequency (UHF) and super high frequency (SHF) communications equipment in preference to very high frequency (VHF) equipment when possible.	Communications equipment operating at UHF and SHF (225 MHz and higher) is less sensitive to EMP damage than VHF (2 to 225 MHz) equipment.
Avoid the use of broadband radios when possible.	Radios operating at frequencies below UHF are particularly sensitive to EMP. Broad-band radios will receive greater voltages and currents from EMP than will narrowband radios.
Shut down and protect unneeded and redundant radio systems.	To provide high assurance that unit tactical field communications will survive EMP, any nonessential and redundant radio systems and equipment should be shut down and protected from the EMP.
Use antennas that have small radiating elements when possible.	The smaller the radiating elements, the less EMP energy will be picked up and, consequently, the less the susceptibility of the associated equipment to EMP. Wide-angle doublet or omnidirectional antennas such as the OE-254 and long-wire field-expedient or AT-984 directional antennas are good collectors of EMP energy and should be avoided when possible.
Keep cable and wire runs as short as possible.	The longer the run, the greater will be the EMP energy that is collected by the cable and wire and transmitted into the attached equipment.
Keep cable runs as straight as possible—AVOID LOOPS.	Loops or bends in cable represent potential unintentional loop antennas that will pick up more EMP energy than straight runs. This is especially important for shorter, intrasite cable runs and is true even for ground cables.
Keep cable and wire on the ground where practical.	Elevating cable and wire may increase the EMP-generated voltages and currents. Burial is usually not practical since items would have to be placed under approximately 10 feet of earth to be adequately protected.
Use shielded twisted pair cable where options in use of cable exist.	Twisted pair cable picks up significantly less EMP energy than do coaxial and unshielded cable. Such reductions with shielded twisted pair cable, however, can be obtained only if the cable and shields are properly connected and terminated at both ends.
Shield equipment when possible.	Electrical and electronic equipment can be protected from the effects of EMP if placed in a totally enclosed electrical shield. Ideally, this shield should be made out of metal (steel or aluminum). For most tactical radios, the fully closed metal case will provide adequate protection if all external conductors have been removed. Metal ammunition cans and propellant charge cans make excellent storage containers for smaller electronic items such as handheld calculators and radio components. Placing items in vehicles, vans, and underground shelters provides effective protection. Wrapping small items in metal foil will also provide a lesser degree of protection for items that do not have their own metal case, such as circuit boards and electrical components.